



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
In application of

Tatsuya NISHIMURA et al.

: Docket No. 2001_1110A

Serial No. 09/890,871

: Group Art Unit 1741

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HYDROTHERMAL ELECTROLYTIC
APPARATUS AND PROCESSES

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INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents,
Washington, DC 20231

Sir:

Pursuant to the provisions of 37 CFR 1.56, 1.97 and 1.98, Applicants request consideration of ☒ the references listed on attached form PTO-1449 and/or ☐ the additional information identified below in paragraph 3. A legible copy of each reference listed on the form PTO-1449 and each U.S. patent application listed below is enclosed, except a copy is not provided for each reference previously cited by or submitted to the Patent Office in prior parent application Serial No.

1a. ☒ This Information Disclosure Statement is submitted:

within three months of the filing date (or of entry into the National Stage) of the above-entitled application, or

before the mailing of a first Office Action on the merits or the mailing of a first Office Action after the filing of an RCE,

and thus no certification and/or fee is required.

1b. ☐ This Information Disclosure Statement is submitted

after the events of above paragraph 1a and prior to the mailing date of a final Office Action or a Notice of Allowance or an action which otherwise closes prosecution in the application, and thus:

(1) ☐ the certification of paragraph 2 below is provided, **or**

(2) ☐ the fee of \$180.00 specified in 37 CFR 1.17(p) is enclosed.

1c. ☐ This Information Disclosure Statement is submitted:

after the mailing date of a final Office Action or Notice of Allowance or action which otherwise closes prosecution in the application, and prior to payment of the issue fee, and thus:

the certification of paragraph 2 below is provided, and

the fee of \$180.00 specified in 37 CFR 1.17(p) is enclosed.

2. It is hereby certified

a. ☐ that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the Statement, or

b. ☐ that no item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing the certification after making reasonable inquiry, was known to any individual designated in §1.56(c) more than three months prior to the filing of the Statement.

3. ☐ Consideration of the following list of additional information (including any copending or abandoned U.S. application, prior uses and/or sales, etc.) is requested.

4. For each non-English language reference listed on the attached form PTO-1449, reference is made to:

a. ☒ a full or partial English language translation submitted herewith,

- b. ☐ a foreign patent office search report (in the English language) submitted herewith,
- c. ☐ the concise explanation contained in the specification of the present application at page,
- d. ☐ the concise explanation set forth in the attached English language abstract,
- e. ☒ the concise explanation set forth below or on a separate sheet attached to the reference:
1. **Japanese Patent Publication No. 9-206796** discloses a method for an oxidative decomposition treatment of an organic sludge by applying a direct current to the sludge under high temperature and high pressure conditions, wherein an inner wall surface of a reactor is used as a cathode, the sludge is adjusted so as to have a predetermined chlorine ion concentration, and a chlorine generating electrode is used as an anode. The drawing shows a single tube reactor. However, the reference is silent regarding the use of multi-tubular reaction cells and of multiple electrodes. Further, it is silent regarding the use of electro-conductive particles.
 2. **Japanese Patent Publication No. 9-215982** discloses a method for an oxidative decomposition treatment of organic pollution materials contained in sewage by applying a direct current to the sewage under high temperature and high pressure conditions wherein an inner wall surface of a reactor is used as an anode so as to render the electrolytic current constant. It also discloses that, when the applied voltage has risen, an inverse voltage is applied to the electrode. The electrode comprises a meshed cylindrical electrode made of titanium plated with platinum. The reactor or inner surface of the reactor is made of titanium or titanium plated with platinum. The drawing shows a single tube reactor. However, this reference is silent regarding the use of multi-tubular reaction cells and of a multiplicity of electrodes. Further it is silent regarding the use of electro-conductive particles.
 3. **U.S. Patent No. 4,389,288** discloses a process for conducting anodic oxidation of carbonaceous materials under high temperature and high pressure conditions, using an iron ion catalyst to produce oxides of carbon at the anode and hydrogen

gas at the cathode. In the hydrothermal electrolytic process according to the present invention, iron ion catalyst is not used. Further, this reference is silent regarding the use of multi-tubular reaction cells and of multiplicity of electrodes. Further, it is silent regarding the use of electro-conductive particles.

4. **U.S. Patent No. 4,405,420** discloses a process for conducting anodic oxidation of carbonaceous materials under high temperature and high pressure conditions, using an iron ion catalyst to have metallic component deposit at the cathode. In the hydrothermal electrolytic process according to the present invention, iron ion catalyst is not used. Further, this reference is silent regarding the use of multi-tubular reaction cells and of a multiplicity of electrodes. Further, it is silent regarding the use of electro-conductive particles.
5. **U.S. Patent No. 4,752,364** discloses a process for conducting electrolytic treatment of organic waste using an electrocatalyst and a homogeneous catalyst under high temperature. In the hydrothermal electrolytic process according to the present invention, no catalyst is used. Further, this reference is silent regarding the use of multi-tubular reaction cells and a multiplicity of electrodes. Further, the reference is silent regarding the use of electro-conductive particles.

5. ☐ A foreign patent office search report citing one or more of the references is enclosed.

Respectfully submitted,

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